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Application No.: 10/601,007
Filed: June 20, 2003
TC Art Unit: 1744
Confirmation No.: 5771

REMARKS

Claims 1-6, 26-28, and 32 have been canceled without prejudice. Applicant reserves the right to prosecute these claims in one or more subsequent divisional applications.

Claims 7, 10, 13, and 33 have been amended. The amendment to "high voltage electrode" is supported by FIG 1(a) and the text on page 15, line 21 through page 16, line 3. The feature "water or an aqueous solution is disposed onto said surface to be sterilized of the packaging material" is supported by the descriptions on page 7, lines 1-2; Page 20, lines 25-26; Page 21, lines 14-16; Page 22, lines 13-14; Page 26, lines 6-7 and Page 28, lines 33-34.

Claims 7-13, 29, and 33 remain in the application and stand rejected.

I. Claim Rejections Under 35 U.S.C. § 112:

Examiner has rejected claims 1-13, 26-29, and 32-33 under § 112 as being indefinite for failing to particularly point out and distinctly claiming the subject matter which applicant regards as the invention. Applicant respectfully submits that claims 1-6, 26-28, and 32 have been canceled without prejudice. Therefore,

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the rejection of these claims is now moot. Applicant respectfully traverses the rejection of the remaining claims.

Examiner has stated that "normal" is a relative term which renders a claim indefinite. Applicant respectfully disagrees.

In the context of the invention, "normal" should be interpreted in a manner done by a person having an ordinary skill in the art. The present invention relates to a method for sterilizing packaging materials by using high voltage pulses from a power source and a device therefor. More specifically, it relates a method for sterilizing packaging materials such as liquids, solid bodies, or combinations of them such as foods, medical supplies, Chinese medicines, cosmetics, feeds, and fertilizers. (Page 1, lines 11-15). Accordingly, the invention is to be practiced at about room temperature and pressure, also known as ambient or normal temperature and pressure.

Moreover, the adjective "Normal" means something which is unchanged or "Conforming with, adhering to, or constituting a norm, standard, pattern, level, or type; typical: normal room temperature; one's normal weight; normal diplomatic relations." *The American Heritage® Dictionary of the English Language, Fourth Edition*. A normal temperature (98.6 F) is also a well-known use of the term. Therefore, "normal" means what temperature or

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pressure normally exists in a room. An example of what occurs in a departure from normal is given in the specification on page 18, beginning at line 18, i.e., "[PET] bottle is in danger of thermal deformation due to a rise in temperature at the time of sterilization." Accordingly, Applicant respectfully submits that "normal" is not indefinite for a person having an ordinary skill in the art when read in the light of the specification and meets the requirements of § 112, second paragraph. Thus, Examiner is requested to withdraw the rejection under § 112.

II. Claim Rejections Under 35 U.S.C. § 103(a):

Examiner has rejected claims under § 103(a). The claim rejections listed in parts 5, 7, 8, 10, 12, and 13 of the Office Action are now moot as a result of the abovementioned cancellation, without prejudice, of claims. As stated above, claims 7-13, 29, and 33 remain in the application, which Applicant believes are patentable as discussed below.

A

In part 6 of the Office Action, claims 7-9, 12, and 29 have been rejected under § 103(a) as being unpatentable over US Patent

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No. 3,383,163 (hereinafter, Menashi) in view of US Patent Application Publication 200400377266 (hereinafter, Perruchot). Applicant respectfully traverses the rejection.

Applicant's claim 7 is directed to a method for sterilizing a surface of a packaging material. Claim 7 specifically recites that "water or an aqueous solution is disposed onto said surface to be sterilized" as reproduced below:

7. A method for sterilizing a surface of a packaging material by using a high voltage pulse power source, comprising a power source for generating high voltage, a high voltage electrode to which the high voltage generated by said power source is applied, and a ground side electrode arranged so as to be opposed to the discharge side of the high voltage electrode, in which the packaging material to be sterilized is placed between both electrodes under normal temperature and normal pressure, and is sterilized by applying high voltage pulses in a gas atmosphere, characterized in that water or an aqueous solution is disposed onto said surface to be sterilized of the packaging material before discharge, during discharge, or before and during discharge. (Emphasis added).

Menashi discloses exposing a surface to a plasma for a time sufficient to destroy microorganisms. However, as the Examiner has noted on the top of page 6 of the Office action, Menashi fails to teach the step of giving water or an aqueous solution to the

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packaging material before discharge, during discharge, or before and during discharge. More specifically, in light of the currently amended claim 7, Menashi fails to teach the step which includes "[] water or an aqueous solution is disposed onto said surface to be sterilized of the packaging material."

The Examiner cites Perruchot as disclosing that a supply of water vapor is provided by the flow of gas passing through the humidification chamber. (Paragraph 0084). Further, the Examiner states that although it is not specifically recited, the water vapor present in the plasma forming gas will cloud the surface of the article being treated when the humidified gas is introduced to the article. (Emphasis added). This is not seen as likely with the article sealed away from the plasma and humidity. (See below). However, Applicant respectfully submits that even if water vapor clouds a surface being treated, it is patentably distinct from "water or an aqueous solution [is] disposed onto said surface to be sterilized" because water being in a liquid state and in contact with the surface, in contrast to mere presence of water vapor. Moreover, there is no suggestion in Perruchot to disclose the feature of including water or an aqueous solution in the recited manner.

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Next, in the present invention, the packaging material to be sterilized is placed between both electrodes and the discharge is made between said both electrodes. Perruchot is limited to a method of sterilizing at least one article by means of a plasma and in the presence of humidity using a non-biocidal gas containing oxygen and nitrogen, the article being placed outside the discharge in a sealed treatment enclosure. (Abstract and paragraph 0046). Consequently, the present invention improves the sterilization effect because the discharge generates active oxygen radicals in water or an aqueous solution disposed onto the surface of the article to be sterilized. On the other hand, Perruchot uses a mixture of gases containing oxygen and nitrogen, from which a low temperature plasma is created having chemical species with sterilizing action on the article to be treated in the presence of humidity.

Accordingly, claim 7 is patentably unobvious over any combination of Menashi and Perruchot. Thus, the Examiner is respectfully requested to allow claim 7.

Claims 8-9, 12, and 29 depend, directly or indirectly, from claim 7 and recite additional features. Therefore, these dependent claims are also patentably unobvious at least for the

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reasons stated above. Thus, Examiner is respectfully requested to allow claims 8-9, 12, and 29.

B

In part 9 of the Office Action, claim 11 has been rejected under § 103(a) as being unpatentable over Menashi, in view of Perruchot, and further in view of US Patent No. 3,819,985 (hereinafter, Dusevoir). Applicant respectfully traverses the rejection.

Claim 11 recites a sterilization method as claimed in claim 7, characterized in that said unevenness on the discharge side surface is formed into a helical form. Examiner states that Dusevoir discloses a discharge electrode with a helical rib in FIG. 4 and column 2, lines 58-66. However, Applicant points out that the combination of Menashi and Perruchot does not disclose or suggest a method in which the packaging material to be sterilized is placed between the two electrodes and water or an aqueous solution is disposed onto the surface to be sterilized. Dusevoir does not suggest or disclose these features. On the other hand, even if Dusevoir is combined with Menashi and Perruchot, the result would teach away from the claimed method.

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Accordingly, claim 11 is patentably unobvious over the combination of Menashi, Perruchot, and Dusevoir at least for the reasons stated above. Examiner is respectfully requested to withdraw the rejection of claim 11.

C

In part 11 of the Office Action, claim 13 has been rejected under § 103(a) as being unpatentable over Menashi, in view of Perruchot, and further in view of document WO 97/22369 (hereinafter, Vavilin). Applicant respectfully traverses the rejection.

Claim 13 recites a sterilization method as claimed in claim 7, characterized in that said packaging material is a container, and the high voltage electrode is inserted in the container. Though Vavilin discloses an electrode placed in a flask containing the object to be treated, Vavilin does not bridge the significant gap left by the combination of Menashi and Perruchot. That is, the combination of Menashi and Perruchot does not disclose or suggest a method in which the packaging material to be sterilized is placed between the two electrodes and water or an aqueous solution is disposed onto the surface to be sterilized. Vavilin

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does not suggest or disclose these features. On the other hand, even if Vavilin is combined with Menashi and Perruchot, the result would teach away from the claimed method.

Accordingly, claim 13 is patentably unobvious over the combination of Menashi, Perruchot, and Vavilin at least for the reasons stated above. Examiner is respectfully requested to withdraw the rejection of claim 13.

D

In part 14 of the Office Action, claim 33 has been rejected under § 103(a) as being unpatentable over Menashi, in view of Perruchot, further in view of Dusevoir, and further in view of Vavilin. Applicant respectfully traverses the rejection.

Claim 33 depends from claim 29 (please see the discussion in Section A above) and recites additional features. Since claim 7 is patentably unobvious, as discussed above, over the combination of Menashi and Perruchot, and Dusevoir and Vavilin also do not disclose or suggest, individually or in any combination thereof, the missing elements of claim 7, claim 33 is also patentably unobvious over the combination of Menashi, Perruchot, Dusevoir, and Vavilin at least for the reasons stated above. Therefore,

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Examiner is respectfully requested to withdraw the rejection of claim 33.

The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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